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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :

SATOSHI FUJIMINE, ET AL.

: EXAMINER: ZIMMERMAN, GLENN

SERIAL NO: 10/618,018 :

FILED: JULY 14, 2003

: GROUP ART UNIT: 2879

FOR: GLASS FOR COVERING
ELECTRODES, COLORED POWDER FOR
COVERING ELECTRODES AND
PLASMA DISPLAY DEVICE :

DECLARATION UNDER 37 § CFR 1.132

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22315

SIR:

Now comes Mr. Satoshi Fujimine who declares and states that:

- (1) I am a named co-inventor of the invention described in the above-identified application.
- (2) I have been employed by Asahi Glass Company, Limited since April 1993 and Asahi Glass Koriyama Electronic Material Co., Ltd. since August 2004 which is a subsidiary company of Asahi Glass Company, Limited, where I have engaged in development of novel glass materials since April 1993.
- (3) The following experiments were conducted by me or under my direct supervision and control.

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- (4) That in order to demonstrate that the glass, as described by Axtell, III et al. (U.S. Patent No. 6,238,847, hereinafter referred to as US '847), does not fall within the scope of the presently claimed glass for covering electrodes the following comparative glass compositions were prepared.
- (5) The starting materials PbO to CuO of the glasses described in Comparative Examples 1-3 (CE1-CE3) of Table 3 are expressed in terms of mass percentage. The mixtures were melted for 1 hour by means of a platinum crucible in an electric furnace of from 1,200°C to 1,350°C and formed into a thin sheet glass. This sheet glass was then pulverized by a ball mill to obtain a glass powder. Examples CE1-CE3 represent glass compositions that fall within the range of the composition as described in US '847 (col. 3, *l.* 63 - col. 4, *l.* 12).

Table 3

	CE1	CE2	CE3
PbO	50.8	46.6	39.9
B ₂ O ₃	21.8	19.3	22.5
SiO ₂	4.7	7.2	7.5
Al ₂ O ₃	4.4	5.7	7.4
BaO	18.0	20.9	22.2
CuO	0.3	0.3	0.3
T _s	550	540	570
ε	11.9	11.5	10.5
α	91	89	82
T _B	550	550	550
T _{550'}	71	----	75

- (6) With respect to glass powders of Comparative Examples CE1-CE3, T_s (unit: °C), ε, α (unit: 10⁻⁷/°C), T_B (unit: °C), and T_{550'} (unit: %) were measured as follows.

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- (7) ϵ : A glass powder was re-melted, molded into a plate shape and then processed into 50 mm x 50 mm x 3 mm, whereupon aluminum electrodes were formed on both sides by a vapor deposition method to obtain a sample. The relative dielectric constant at 1 MHz at 20°C. of this sample was measured by a LCR meter.
- (8) T_S : The softening point of the glass was measured by means of a differential thermal analyzer.
- (9) α : A glass powder was molded and then fired by maintaining it for 10 minutes at a firing temperature shown in line for T_B (unit: °C) in each Table to obtain a fired product, which was processed into a cylindrical shape having a diameter of 5 mm and a length of 2 cm, whereupon the average linear expansion coefficient within a range of from 50°C to 350°C was measured by a thermal expansion meter.
- (10) T_B : Firing temperature as defined in the Specification on page 15 of the above-identified application.
- (11) T_{550} : The percent transmittance of light having a wavelength of 550 nm was measured by means of a self-recording spectrophotometer U-3500 (integrating-sphere type), manufactured by Hitachi, Ltd. The transmittance without a sample was rated 100%.

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- (12) As it can be seen from the tabulated results from the above-identified Comparative Examples (CE1-CE3), compositions that fall inside the range of a glass described by US '847, have characteristics that are undesirable for the application of a glass covering electrodes in a plasma display device.
- (13) Inspection of percent transmittance of light value, T_{550} , of Comparative Example 1 reveals a value that is unacceptably low.
- (14) Inspection of Comparative Example 2 shows that it was impossible to measure the percent transmittance of light value, T_{550} , due to the fact that the glass was crystallized; which is unacceptable.
- (15) Inspection of value for the relative dielectric constant ϵ , as measured at 1 MHz at 20°C, reveals that the observed value, 10.5, is unacceptably low.

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(16) The undersigned Declarant declare further that all statements made herein of their own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

(17) Further deponent saith not.

Satoshi Fujimine
Satoshi Fujimine

11 Jan, 2005
Date